

merely illustrative of applications of the principles or this invention and many other embodiments and modifications may be made.

What is claimed is:

1. A method for determining the location of a touch made to a capacitive touchscreen sensor which sensor comprises

- (1) a touchscreen comprising a touch-sensitive region comprising a resistive layer,
- (2) a plurality of electrodes distributed around the touch sensitive region, and
- (3) a control circuit for charging the resistive layer, sensing capacitance on the resistive layer, and providing a control signal indicating coordinates of touch position on the touchscreen, said circuit
  - (a) being connected to the plurality of electrodes, and
  - (b) comprising multiple input/output connections to the touchscreen and multiple sub-circuits, each sub-circuit (i) being associated with one electrode, and (ii) comprising first and second switching elements, an energy storage element, a detector for measuring charge, and an analog to digital converter for digitizing the output of the detector, arranged such that for each sub-circuit, the first switching element, when closed, connects an electrode to the energy storage element and the second switching element, when closed, connects the energy storage element to the detector,

said method comprising

- (A) closing a first switching element of each sub-unit while a second switch element is open so as to connect

an electrode to an energy storage element, thus charging the electrode to a set voltage level,

- (B) opening the first switching element while closing the second switching element to connect the energy storage element to a detector, thus transferring energy from the detector to the energy storage element in an amount equal to that used to charge the electrode,
- (C) repeating steps (A) and (B) until saturation of a detector in one sub-unit occurs, thus stopping the charging of the detectors in all sub-units,
- (D) measuring accumulated energy in the detector of each sub-circuit, and
- (E) using the measurement of accumulated energy to determine coordinates of a touch position on the touchscreen.

2. The method of claim 1 wherein the set voltage level is a virtual ground.

3. The method of claim 2 wherein the electrodes are charged to a specified potential relative to a reference.

4. The method of claim 3 wherein the specified potential is +2.5V.

5. The method of claim 1 wherein a gain control is automatically set by using a plurality of most significant bits of the analog to digital converter to determine saturation of the detector.

6. The method of claim 1 wherein in each sub-circuit the first switching element and the second switching element are electrically connected in series and to a capacitor which is connected to ground.

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